Protective Measures

Background

At the June meeting, the Task Force proposed five categories of protective measures: education, land use controls, best management practices, physical barriers, and reducing contamination. A description of each category (with several examples of activities in each category) is provided below and a potential sixth category, public health programs, is identified for consideration.

Education

Educational programs are designed to inform individuals and businesses of the presence of contamination and steps that can be taken to limit or reduce exposure to the contamination. Such programs use a wide range of techniques to distribute information and increase public awareness. Examples include:

- Public meetings: Agencies can hold public meetings to announce study findings and provide information on steps that people can take to limit exposure. For example, Haywood County, the State of North Carolina, and EPA held a series of public meetings after pesticide contamination was discovered at the Barber Orchard site.

- Information brochures/fact sheets/flyers/newsletters: Agencies and other organizations can prepare and distribute written materials that summarize study information and steps that people can take to limit exposure. For example, the Tacoma Pierce County Health Department, Public Health Seattle & King County, and the Snohomish County Health Department have prepared and distributed fact sheets on ways to reduce exposure to contaminated soils. Vashon Island puts information on individual protection measures in the school newsletter approximately once per quarter.

- Working with neighborhood associations and other civic groups. Agencies and other organizations can distribute information to residents through meetings of neighborhood associations and local civic groups or partner with community-based organizations to conduct outreach activities. For example, community organizations, with financial support from government agencies, conducted much of the individual outreach and education in the Verdese Carter Park area of Oakland, CA.

- Home visits: Agencies have implemented programs that involve contacting individuals at home. For example, the Alameda County Lead Poisoning Prevention Program, EPA, and the U.S. Department of Housing and Urban Development conducted an extensive door-to-door educational campaign in the Verdese Carter Park area.

- School and child-care center visits: Agencies have developed and implemented programs designed to deliver exposure reduction information directly to young children through visits to schools and child-care centers. Such a program was an important part of the educational program in Trail, BC.

Land-Use Controls

In the cleanup context, land-use controls typically are actions by government or agreements between two or more parties that limit or prohibit activities that could result in exposure to contaminants or that could harm a physical barrier or other engineered control. They also might include actions designed to increase knowledge of contamination, such as disclosure approaches. Examples of land-use controls include:

- Government controls: Zoning, permits, or use restrictions can be used to limit uses of or access to properties where contaminants are present. For example, zoning or use restrictions can limit a property to industrial uses to prevent exposure of children to contaminated soil.

- Proprietary controls: These restrictions by a property owner are based on state common law and usually can be written so that the restriction is passed onto subsequent owners. Examples include easements, which can be used to limit use of a property or to provide access to a second party, and covenants, which are often used in connection with property transfers to limit future use of the property.

- Informational devices: Informational devices, such as deed notices and disclosure requirements, provide information about contaminants present on properties and/or actions that have been or are recommended to reduce or prevent exposure to contaminants on those properties. Informational devices can discourage improper use of a property or inform property owners or users when steps should be taken to minimize exposure. Property owners can be required to disclose information about the presence of contamination or potential contamination during property transfers, such as the current approach to lead-based paint disclosures. Notices in property deeds may or may not have associated enforceable requirements, depending on local laws, such as the specific types of deed notices used in New Jersey and Massachusetts.

Best Management Practices

As part of day-to-day activities, governments, businesses, and/or property owners can take actions or adopt requirements to limit or reduce exposure to soil contaminants in certain circumstances, such as utility installation. Best management practices (BMPs) could be developed for different geographic areas, land-use types, and/or types of activity (e.g., digging) and could involve implementation of actions suggested through educational programs or other actions. For example, the Washington Department of Labor and Industries developed good practice guidelines for the Everett Smelter Study Area. Examples of elements of BMPs include:

- Hazard communication: Individuals who can contact contaminated soil can be provided information regarding the presence and potential health effects of contaminated soil and appropriate methods to minimize exposure.

- Personal hygiene: Practices such as not eating or smoking during activities involving exposure to contaminated soil and washing hands and face after such activities can be recommended.

- Work clothing: Use of special clothing such as coveralls with separate laundering of such items can be recommended to limit exposure of other family members.

- Dust control: Activities such as regular sweeping of streets and parking lots can be recommended to limit exposure of community members to contaminated soil. For example, street sweeping was included in the best management practices program at Trail, BC.

Physical Barriers

Physical barriers prevent or limit unauthorized access to property or exposure to contaminated soil. Examples of physical barriers include:

- Fences: A fence around the property or areas with contaminated soil can be used to limit access.

- Covers: Contaminated soil can be covered with vegetation such as grass or with other materials such as wood chips to reduce exposure to contaminated soil.

- Soil capping: Contaminated soil can be covered with clean soil to limit access and exposure to contaminated soil.

- Structural barriers: Barriers such as buildings or roads can be used to limit access to contaminated soil.

- Maintenance: Activities to maintain physical barriers such as inspections and repair can be used voluntarily or mandated to increase long-term effectiveness.

Reducing Contamination

Actions to reduce contamination decrease the concentration of contaminants on a property. Examples of actions that reduce contamination include:

- Soil blending: Mixing of contaminated soil with clean soil can reduce contaminant concentrations in near surface soil. Blending contaminated soil with clean soil from on or off site was one of the main recommendations of the New Jersey Historic Pesticide Contamination Task Force.

- Soil removal and replacement: Contaminated soil can be excavated and replaced with clean soil. At many smelter sites (Anaconda, MT; Bunker Hill, ID; Globeville, CO; Herculaneum, MO; Murray, UT; and Verdese Carter Park, CA), removing contaminated soil and replacing it with clean fill was used to remediate residential areas with soil concentrations above action levels.

- Phytoremediation: Plants can be used to remove contaminants from soil. The Trail Lead Program considered phytoremediation as a remedy, but found that it was not practical for residential areas.

Potential Additional Category to Consider:

Public Health Programs

Health programs have been included as part of the remedy at cleanup sites such as Globeville, CO; Murray, UT; and Trail, BC. These programs generally involve activities designed to identify and focus protective measures on specific populations considered to be at high risk. These programs generally include some combination of (1) health monitoring activities (e.g., blood lead testing or urinary arsenic screening); (2) education on steps to reduce exposure; and (3) case management or intervention activities designed to evaluate and address sources contributing to elevated exposures identified through health monitoring. The Trail program emphasizes education, health monitoring (e.g., blood lead screening), and individual case management.